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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,174	11/11/2003	Michael Donovan Mitchell	8681RCR2	4650

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EXAMINER

KIM, YOON YOUNG

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/705,174

Applicant(s)

MITCHELL ET AL.

Examiner

Yoon-Young Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Amendment filed on September 27, 2005.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-3, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy, U.S. Patent No. 6,241, 893 B1 in view of Derbyshire et al., U.S. Patent No. 6,057,262 and Hou et al., U.S. Patent No. 6,565,749 B1.

Regarding Claim 1, Levy discloses a filter for providing potable water, comprising: a housing (Fig. 1, #11) having an inlet (#32) and an outlet (#33); and a filter material disposed within the housing formed at least in part from a plurality of activated carbon filter particles (Col. 11, Lines 53-58); wherein the filter is operable to remove microorganisms (Col. 18, Lines 50-53).

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Levy does not disclose a cationic polymer. Hou teaches a cationic polymer bonded to the reactive surface of a microorganism filter (Col. 32, Lines 29-40). It would have been obvious to one of ordinary skill in the art to modify Levy by adding the cationic polymer of Hou to attract microorganisms in the liquid being filtered (Col. 3, Lines 15-20). Levy in view of Hou does not disclose mesoporous activated carbon. Derbyshire teaches mesoporous activated carbon particles (Col. 4, Lines 20-28) for wastewater treatment. It would have been obvious to one of ordinary skill in the art to modify Levy in view of Hou with the element of Derbyshire because it has a relatively high pore surface area for increased adsorption activity while retaining a relatively high hardness and relatively low friability to be adapted to withstand regeneration (Col. 4, Lines 48-59).

Regarding Claim 2, Hou discloses the cationic polymer is selected from the group consisting of: polyvinylamine, poly(N-methylvinylamine), polyallylamine, polyallyldimethylamine, polydiallylmethylamine, polydiallyldimethylammonium chloride, polyvinylpyridinium chloride, poly(2-vinylpyridine), poly(4-vinylpyridine), polyvinylimidazole, poly(4-aminomethylstyrene), poly(4-aminostyrene), polyvinyl(acrylamide-co-dimethylaminopropylacrylamide), polyvinyl(acrylamide-co-dimethylaminoethylmethacrylate), polyethyleneimine, polylysine, DAB-Am and PAMAM dendrimers, polyaminoamides, polyhexamethylenebiguanide, polydimethylamine-epichlorohydrine, aminopropyltriethoxysilane, N-(2-aminoethyl)-3-aminopropyltrimethoxysilane, N-trimethoxysilylpropyl-N,N,N-trimethylammonium chloride, bis(trimethoxysilylpropyl)amine, chitosan, grafted starch, the product of alkylation of polyethyleneimine by methylchloride, the product of alkylation of polyaminoamides with epichlorohydrine, cationic polyacrylamide with cationic monomers, dimethyl aminoethyl acrylate methyl chloride (AETAC), dimethyl aminoethyl methacrylate methyl chloride (METAC), acrylamidopropyl trimethyl ammonium chloride (APTAC), methacryl amodopropyl trimethyl

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ammonium chloride (MAPTAC), diallyl dimethyl ammonium chloride (DADMAC), ionenes, silanes and mixtures thereof (Col. 7, Line 38 – Col. 8, Line 64).

Regarding Claim 3, Hou discloses the cationic polymer is selected from the group consisting of: polyaminoamides, polyethyleneimine, polyvinylamine, polydiallyldimethylammonium chloride, polydimethylamine-epichlorohydrin, polyhexamethylenebiguanide, poly-[2-(2-ethoxy)-ethoxyethyl-guanidinium] chloride (Col. 7, Line 38 – Col. 8, Line 64).

Regarding Claim 5, Derbyshire discloses the that the sum of the mesopore and the macropore volumes of the plurality of mesoporous activated carbon filter particles is between about 0.2 mL/g and about 2 mL/g (Col. 4, Lines 23-30).

Regarding Claim 8, Levy in view of Hou does not disclose the single-collector efficiency or the filter coefficient. Optimum or workable ranges of result-effective variables would be determined to achieve the desired results in the process. In re Boesch, 205 USPQ 215 (CCPA 1980). The filter characteristics used to calculate the single-collector efficiency or the filter coefficient are result-effective variables, and their optimum ranges would have been determined by routine experimentation in order to achieve the desired results in filtration.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beauman et al, U.S. Patent No. 4,396,512 in view of Derbyshire.

Regarding Claim 10, Beauman discloses a filter for providing potable water, comprising: a housing having an inlet and an outlet (Col. 15, Lines 5-10); and a filter material disposed within the housing formed at least in part from a plurality of activated carbon filter particles and other materials selected from the group consisting of activated carbon powders, activated carbon granules, activated carbon fibers, zeolites, activated alumina, activated magnesia,

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diatomaceous earth, activated silica, hydrotalcites, glass, polyethylene fibers, polypropylene fibers, ethylene maleic anhydride copolymer fibers, sand, clay and mixtures thereof (Col. 4, Line 67 - Col. 5, Line 2), wherein at least a portion of the other materials are coated with a material selected from the group consisting of silver, a silver containing material, a cationic polymer and mixtures thereof (Col. 14, Lines 10-24); wherein the filter is operable to remove microorganisms (Col. 2, Lines 18-31). Beauman does not disclose the pore size of the filter. Derbyshire teaches mesoporous activated carbon particles (Col. 4, Lines 20-28) for wastewater treatment. It would have been obvious to one of ordinary skill in the art to modify Beauman with the element of Derbyshire because it has a relatively high pore surface area for increased adsorption activity while retaining a relatively high hardness and relatively low friability to be adapted to withstand regeneration (Col. 4, Lines 48-59).

4. Claims 4, 6-7, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy in view of Derbyshire and Hou as applied to Claim 1 above, and further in view of Beauman et al, U.S. Patent No. 4,396,512.

Regarding Claim 4, Levy in view of Derbyshire and Hou discloses mesoporous activated carbon filter particles but does not disclose silver or silver containing materials. Beauman discloses at least a portion of the activated carbon filter particles coated with silver or a silver containing material (Col. 14, Lines 10-24). It would have been obvious to one of ordinary skill in the art to modify Levy in view of Derbyshire and Hou by adding the silver element of Beauman so that bacterial growth in and on the carbon filtration material is inhibited (Col. 5, Lines 31-38).

Regarding Claim 6-7, Levy in view of Derbyshire and Hou does not disclose BRI, VRI, F-BLR, and F-VLR values. Beauman discloses that the BRI, VRI, F-BLR, and F-VLR values are as claimed by the invention and in compliance with EPA regulations (Col. 3, Lines 8-14). It

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would have been obvious to one of ordinary skill in the art to modify Levy in view of Derbyshire and Hou by adding the BRI, VRI, F-BLR, and F-VLR values of Beauman in order to comply with EPA regulations.

Regarding Claim 14, Hou discloses the cationic polymer is selected from the group consisting of: polyaminoamides, polyethyleneimine, polyvinylamine, polydiallyldimethylammonium chloride, polydimethylamine-epichlorohydrin, polyhexamethylenebiguanide, poly-[2-(2-ethoxy)-ethoxyethyl-guanidinium] chloride (Col. 7, Line 38 – Col. 8, Line 64).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levy in view of Derbyshire and Hou as applied to Claim 1 above, and further in view of Denkewicz, Jr. et al., U.S. Patent No. 5,772,896.

Regarding Claim 9, Levy in view of Derbyshire and Hou discloses that the plurality of mesoporous activated carbon filter particles are basic (Levy, Col. 35, Lines 11-16) but does not disclose a point zero charge or an ORP. Denkewicz teaches a point zero charge between about 9 and about 12 (Col. 1, Lines 45-51) and an ORP between about 290 mV and about 175 mV (Col. 1, Lines 23-27). Optimum or workable ranges of result-effective variables would be determined to achieve the desired results in the process. In re Boesch, 205 USPQ 215 (CCPA 1980). The point zero charge and ORP are result-effective variables, and their optimum ranges would have been determined by routine experimentation in order to achieve the desired results in filtration.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levy in view of Derbyshire and Hou as applied to Claim 1 above, and further in view of Tremblay.

Regarding Claim 12, Levy in view of Derbyshire and Hou does not disclose a package or a method of communicating information. Tremblay teaches a package for containing the filter; and wherein either the package or the filter housing comprises information that the filter or filter material provides reduction of water contaminants (Col. 5, Line 54 – Col. 6, Line 4). It would have been obvious to one of ordinary skill in the art to modify Levy in view of Derbyshire and Hou by adding the elements of Tremblay in order to convey the important benefits of the filter (Col. 5, Lines 63-67).

7. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beauman in view of Derbyshire as applied to Claim 10 above, and further in view of Tremblay et al., U.S. Patent No. 6,660,166 B2.

Regarding Claim 11, Beauman in view of Derbyshire does not disclose a cationic polymer. Hou teaches a cationic polymer bonded to the reactive surface of a filter (Col. 32, Lines 29-40). It would have been obvious to one of ordinary skill in the art to modify Beauman in view of Levy by adding the cationic polymer of Hou to attract microorganisms in the liquid being filtered (Col. 3, Lines 15-20).

Regarding Claim 13, Beauman in view of Derbyshire does not disclose a package or a method of communicating information. Tremblay teaches a package for containing the filter; and wherein either the package or the filter housing comprises information that the filter or filter material provides reduction of water contaminants (Col. 5, Line 54 – Col. 6, Line 4). It would have been obvious to one of ordinary skill in the art to modify Beauman in view of Levy by adding the elements of Tremblay in order to convey the important benefits of the filter (Col. 5, Lines 63-67).

Response to Arguments

8. Applicant's arguments with respect to Claims 1 and 10 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that there is no suggestion to combine the references, it would be obvious to combine Derbyshire with either Levy in view of Hou or Beauman in order to produce an activated carbon filter with a relatively high pore surface area for increased adsorption activity while retaining a relatively high hardness and relatively low friability with the ability to withstand regeneration (Col. 4, Lines 48-59). Although as the Applicant states Derbyshire does teach that mesoporous carbons are used for adsorption of large molecules, Derbyshire further teaches an activated carbon with a mixture of microporous and mesoporous particles (Examples 1-26) used in applications involving adsorption, separation, or catalysis (Col. 1, Lines 39-44). Since the activated carbon consists of a mixture of microporous and mesoporous particles, the activated carbon would not be limited to the adsorption of large molecules. Furthermore, even if only mesoporous particles were used the pore size would not limit the activated carbon in separation or catalysis functions. Derbyshire teaches an activated carbon that can be manufactured to meet the needs of a particular use or application (Col. 2, Lines 33-38) such as in the filter of the invention.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yoon-Young Kim whose telephone number is (571) 272-2240. The examiner can normally be reached on 8:30-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YK

11/16/05


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